

the conditions and the duration of the first epitaxial deposition and of the anneal being such that the dopants diffusion length is lower than the thickness of the layer formed during the first deposition; and

c) performing a second epitaxial deposition after step b).

2 11. The method of claim 10, wherein the first epitaxial deposition is preceded by an anneal step.

3 12. The method of claim 10, wherein the first epitaxial deposition is performed at a temperature on the order of 1100°C and the second epitaxial deposition is performed at a temperature on the order of 1050°C.

A 4 13. The method of claim 12, wherein the first deposition is pursued to obtain a thickness on the order of 40 to 60 nanometers.

5 14. The method of claim 10, wherein the step of anneal is performed in the presence of hydrogen.

6 15. The method of claim 10, wherein, during step a), the flow of carrier gas is increased.

7 16. The method of claim 10, wherein the epitaxial depositions are performed in the presence of an arsenic source.

8 17. The method of claim 10, wherein step b) is performed in the presence of an arsenic source.

9 18. The method of claim 10, wherein the step a) and the step c) are performed such that the thickness of the layer formed during the first deposition is low with respect to a sum of

the thickness of the layer formed during the first deposition and the thickness of the layer formed during the second deposition.

<sup>10</sup> 19. The method of claim 15, wherein a pressure of the carrier gas is greater than 60 torr.

<sup>3</sup> 20. The method of claim 10, wherein the first epitaxial deposition is performed at a temperature higher than that at which the second epitaxial deposition is performed.

~~21.~~ The method of claim 10, wherein performing an anneal comprises a first duration at a first temperature, a ramp duration to a second temperature and a second duration at the second temperature.

<sup>A</sup> ~~22.~~ The method of claim 21, wherein the first epitaxial deposition is performed over a duration, and a sum of the ramp duration and the second duration is greater than the duration of the first epitaxial deposition.

~~23.~~ The method of claim 21, wherein the first duration has substantially the same duration as the second duration.

~~24.~~ The method of claim 22, wherein the first duration has substantially the same duration as the second duration.

~~25.~~ The method of claim 18, wherein the first epitaxial deposition is performed at a temperature higher than that at which the second epitaxial deposition is performed.

26. The method of claim 18, wherein the anneal comprises a first duration at a first temperature, a ramp duration to a second temperature and a second duration at a second temperature.